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NIH/NIAID's Radiation/Nuclear Medical Countermeasures Development Program

Background

Safeguarding people against the threat of nuclear or radiological agents is not only a priority for U.S. national security but also a major public health concern. Should mass exposure to these hazards occur, medical countermeasures that prevent or repair tissue damage will need to be widely available. Because it is unlikely that people will have advanced warning, these countermeasures must be effective when given within days of the radiation exposure. Healthcare providers must be equipped to treat both the acute and long-term effects of radiation damage. However, very few medical products exist to mitigate or treat the injuries that can result from a nuclear or radiological accident or attack.

How the Program Works

Within the National Institutes of Health (NIH), the National Institute of Allergy and Infectious Diseases (NIAID) has been tasked with developing a robust research program to identify and develop new medical countermeasures for use in case of a radiological or nuclear incident. NIH/NIAID was assigned this role by the Secretary of the U.S. Department of Health and Human Services (HHS) through the Project BioShield Act of 2004. This Act allows for expedited peer review and award of all grants, contracts, and cooperative agreements for the research and development of countermeasures against biological, chemical, radiological, or nuclear agents.

In 2006, Title IV of the Pandemic and All-Hazards Preparedness Act (PAHPA) established HHS's Biomedical Advanced Research and Development Authority (HHS/BARDA) to manage Project BioShield. HHS/BARDA also is responsible for the advanced development, licensure, and acquisition of emergency medical countermeasures for the Strategic National Stockpile (SNS), the storehouse of medical supplies distributed in the event of a widespread public health emergency. SNS is managed by the Centers for Disease Control and Prevention.

Funding Mechanisms

The NIH/NIAID radiation/nuclear medical countermeasures program supports research and development of new countermeasures to protect against, mitigate, or treat damage caused by unintentional radiation exposure through two funding mechanisms: 1) grants for basic/translational and small business research programs and 2) contracts for product development support services.

Research Priority Areas

The research priority areas of the program are to develop

- Drugs to treat or mitigate radiation injury
- Drugs to remove radioactive materials from the body
- Biodosimetry tools to determine levels of radiation exposure received by an individual

Given that a sizable and diverse group of people may need treatment after a large-scale radiological or nuclear incident, these three areas must also include

- Medical products and regimens that can be administered at least 24 hours after radiation exposure, with emphasis on safety, broad activity, long shelf life, and ease of administration in an emergency scenario
- Minimally invasive biodosimetry methods or devices capable of identifying and measuring absorbed radiation dose due to internal and/or external radiation exposure, and rapidly and accurately distinguishing individuals who need treatment from those who do not
- New medical product formulations that can be easily administered to large numbers of people, including special populations (e.g., children, pregnant women, the elderly, and immunocompromised people)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health
National Institute of Allergy and Infectious Diseases

Currently Funded Projects

Examples of currently funded projects in NIH/NIAID's radiation and nuclear medical countermeasures research and development program include

- Treatments for injury to major systems and organs of the body, including bone marrow, gastrointestinal system, lungs, kidneys, cardiovascular system, central nervous system, and skin, as well as combined injury (radiation plus burn, wound, trauma, or infection)
- Investigations into classes of molecules that might enhance repair of radiation-induced damage and increase survival, including growth factors, cell-signaling molecules, antioxidants, anti-apoptotics, anti-inflammatory agents, and antibiotics
- Development of novel agents that help to remove radioactive material from the body
- Methods to reconstitute stem cells, their progeny, or mature cells of the immune system following exposure to radiation
- Biomarkers that identify people exposed to radiation, provide an accurate assessment of absorbed radiation dose, and predict future health risks

Contact Information

If you or your company has a product that may be of interest to us, please contact Richard Hatchett, M.D., at hatchettr@niaid.nih.gov, or Bert Maidment, Ph.D., at maidmentb@niaid.nih.gov.

Additional Information

- For more information on NIH/NIAID's Medical Countermeasures Against Radiological and Nuclear Threats programs, please visit www.niaid.nih.gov/topics/radnuc/default.htm.
- For more information on the Project Bioshield Act of 2004, please visit www.hhs.gov/aspr/barda/bioshield.
- For more information on HHS's Biomedical Advanced Research and Development Authority, please visit www.hhs.gov/aspr/barda/.

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